ELEC/PHYS 605 Fall 2014
Computational Electrodynamics and Nanophotonics

Organization

The course will meet weekly on Tuesdays from 2:30-5 pm in HBH 22. Due to travel, several lectures will have to be rescheduled. Extra class meetings may also be scheduled. The dates and times for these meetings will be determined in consultation with all students. The instructor is Peter Nordlander (nordland@rice.edu). The graders are Xiao Yang (Yang.Xiao@rice.edu) and Hangqi Zhao (Hangqi.Zhao@rice.edu) with offices BH323 and BH327.

Structure of the course

The course will consist of lectures, homework and homework presentations, and a presentation of an independent project. At the end of the class, the students should schedule a final oral exam.

Copies of the lectures will be sent to each student within a few days of each lecture

The homework should be packed in a single tar/zip file with a name that includes the name of the student and emailed to Xiao or Hangqi before the due date. Make sure to include detailed instructions of how to run the programs and sample inputs and outputs.

Examples of projects are given below. Each student should present their project in a 40+5 minute presentation. The presentation should include a detailed pedagogical description of the approach including its advantages and disadvantages and an in-depth study and/or a simple numerical application of the method.

Grading

The grade will be determined from homework (50%), project presentation (25%), and the oral final exam (25%). The students are required to attend all lectures and presentations.

Examples of independent project topics

If more than one student picks the same topic, the students need to coordinate their presentations so that repeat presentations are eliminated.

Mie scattering, generalized Mie scattering, T-matrix, Plasmon Hybridization, Generalized multipole methods, Finite Difference Time-domain, Discrete Dipole Approximation, Finite Element, Boundary Element, Relaxation methods, Green's function methods, Variational approaches, Comsol, …….